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Energy Savings Obligations in the UK – a history of change

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Abstract

This paper looks at Energy Savings Obligations in the UK. More specifically, it discusses how the policy instrument changed over time and what the drivers of that change were. The UK was the first country in Europe that introduced Energy Savings Obligations on suppliers to save energy at the customer end in 1994. Since then this policy changed rapidly and is now the principal instrument to deliver energy savings in the housing stock. This paper aims to answer three questions: First, how did the policy instrument change over time? Second, what were the key drivers of that change? Third, how did those pressures filter through the policy process and affect the energy savings obligations?

Keywords

energy savings obligations; energy efficiency policy; policy change

1 Introduction

One of the most frequently cited drivers for policy change is the emergence of crises such as energy price shocks (Campbell 2004). The oil crisis in 1973 is a good example for policy change induced by crises in the form of non-linear price signals: Whereas before energy efficiency was of very limited political concern, this changed ‘almost overnight’ (Eyre 1997, p. 2). However, while unexpected sudden crisis type events certainly can explain some of the shifts in energy efficiency policy, many of the changes were the result of more

gradual and long-term pressures such as the expected impact of climate change, rising energy prices, institutional changes, and increasing fuel poverty.

Considering the above, this paper looks at the process of policy change in the context of home energy efficiency focusing on Energy Savings Obligations in the UK, the so-called Supplier Obligation (SO). The SO started back in 1994, around the time when energy markets were liberalised in the UK. Since then, it has become a high profile policy and is now the principal instrument to reduce carbon emissions in the UK housing stock and the second most important climate policy after the EU Emissions Trading Scheme. However, in the beginning the targets imposed by the SO were at a much lower level compared to the scale they reached in more recent years. Nobody would have anticipated the remarkable change the SO has gone through over the last 18 years. This paper asks a simple question: How could a fairly modest policy instrument develop to become the most important element by far in the UK policy mix tackling carbon emissions in the domestic sector?

The research is based on fifteen expert interviews in the UK covering all of the key stakeholders involved such as energy suppliers, government departments and agencies, researchers, and industry associations. Furthermore, a broad document analysis has been carried out covering the years 1994-2010. In many cases claims by the interviewees could be backed up with official documents. However, where no specific evidence is given to support a claim, the reader may assume it was based on the expert interviews the author conducted. Because some interviewees had potential conflicts of interests and their responses may have been biased as a result, further interviews and documents were used as a means of triangulation.

Following this question, the paper is structured to include four distinct parts: First, the paper introduces the basic architecture of the UK Supplier Obligation (SO). Second, an overview of its change over time is presented. Third, the patterns and drivers of policy change are analysed in detail focusing on eight key areas. Finally, a concluding section sums up which drivers may help explaining the policy change experienced in the UK, provides an outlook to the future of the SO, and suggests further promising research avenues.

2 Background on the UK Supplier Obligation

This section presents the architecture of the SO in order to give the reader a good overview of how the scheme works; so far a comprehensive summary of the SO's design is lacking in the academic literature. The following will be descriptive but is deemed important for a thorough understanding of the policy instrument under investigation.

In the UK the SO is the most important instrument to deliver energy and carbon savings in the domestic sector (OFGEM 2005) and both the 2004 and 2007 Energy Efficiency Action Plans highlight the SO as the principal policy mechanism to deliver energy savings in the domestic sector (2004b, 2007b). The basic concept of the SO is that central government imposes an energy savings target on large energy suppliers (gas and electricity) that has to be achieved at the customer end, which may relate to energy consumption or carbon emissions. Businesses and industrial end-users are not covered by the scheme, they are targeted by other policy instruments such as the Climate Change Levy and Climate Change Agreements, as well as the recently introduced Carbon Reduction Commitment.

In the UK, the target is set by the Department of Energy and Climate Change (DECC) for a defined period of time using a bottom-up approach assuming an illustrative mix of various energy saving measures that is likely to be used in order to deliver the obligation. Note that it is established in comparison to a baseline and does not require a reduction of final energy use. Rather, it is defined in terms of lifetime savings achieved by the measures promoted via the obligation. The energy regulator, the Office of Gas and Electricity Markets (OFGEM), is responsible for administering the SO and enforcing it. OFGEM defines individual savings targets for each energy supplier and checks whether the obligated companies achieve them.

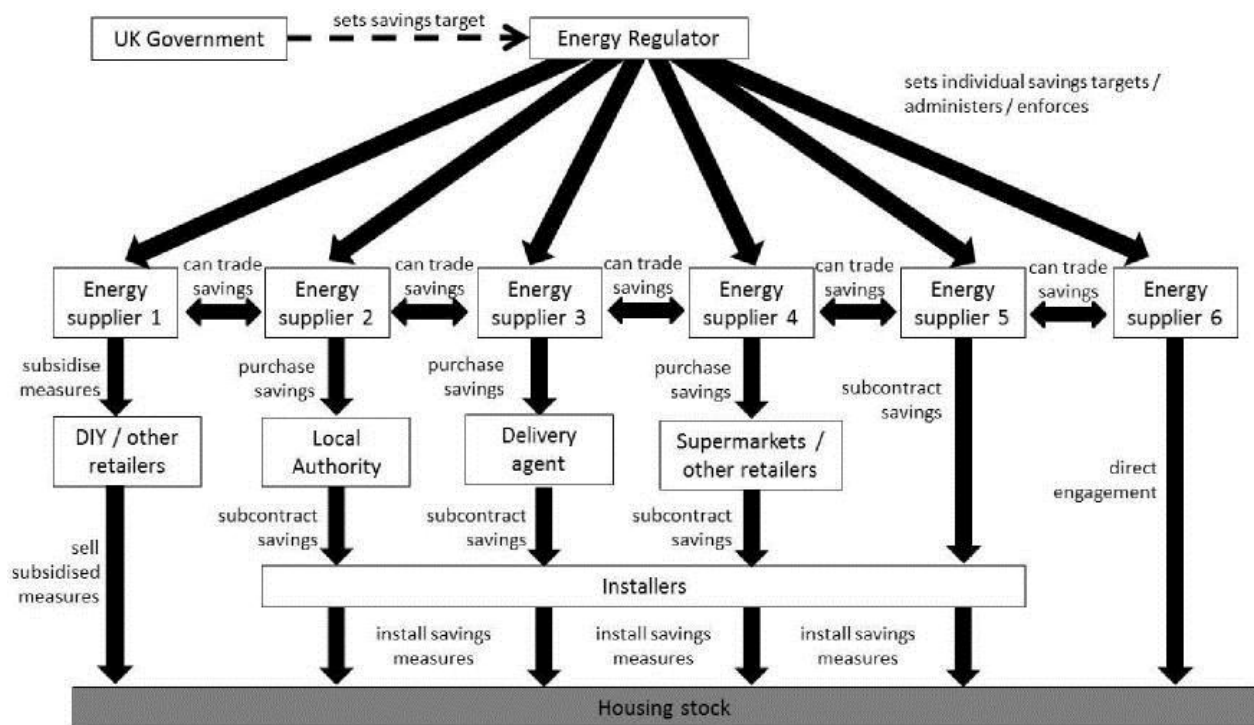
There are various routes the energy suppliers use (Figure 1): First, the energy suppliers contract installers of energy saving measures (for example cavity wall insulation) that carry out the work in homes according to a defined standard and with a certain benchmark for energy and / or carbon savings. Second, they may subsidise energy efficient products (for example insulation material) sold via 'do it yourself' (DIY) and other retailers. Third, energy suppliers deliver their obligation through work with managing agents, Local Authorities, supermarkets and other retailers which in turn subcontract installers and manage the delivery process.

Finally, energy companies may choose to work with the home occupants directly. In the past, energy companies have for example promoted the use of compact fluorescent lamps (CFLs) via mass mail-outs of free light bulbs, although this is now prohibited. More recently, some energy companies, such as British Gas, set up their own insulation business and deliver most of their obligation themselves.

The SO is based on self-reporting and a certain degree of trust: While OFGEM dip-checks the figures provided by the energy suppliers, they do not check measure by measure given the administrative burden this would involve. In theory, energy suppliers could inflate their figures, but the potential fine for doing this and for not achieving the target is significant: up to 10% of global turnover of the obligated companies in case they miss their target.

Figure 1 sketches the basic architecture of the SO as described above. Note that for illustrative reasons the figure cannot cover all the details sufficiently and different energy suppliers use a mix of different delivery routes.

Figure 1: Architecture of the SO



While there was a succession of different SOs, the basic logic remained the same. The first SO was called Energy Efficiency Standards of Performance (EESoP) and ran from 1994 to 1998. Its successors, EESoP 2 and EESoP 3, ran from 1998 to 2000 and from 2000 to 2002 respectively. In 2002, the scheme's name was changed to Energy Efficiency Commitment (EEC). EEC 1 was in place from 2002 to 2005 and EEC 2 from 2005 to 2008. EEC was eventually renamed in 2008 to the Carbon Emissions Reduction Target (CERT) that runs from 2008 to 2012. For the post-CERT period a new scheme, called Energy Company Obligation (ECO), is planned. In some instances the name change reflected changes of the SO, such as a change of focus from energy to carbon emissions when CERT was introduced (see more details below), but generally the changing of names should not be overrated because the main principles did not change significantly and all schemes are a succession of the SO.

3 Main changes to the Savings Obligation over time

The main change identified is the overall ambition of the SO which is determined by the target size. A good indicator of policy change is also the cost associated with the SO. Other changes included changes in the design with regard to social equity, trading, banking, the mix of measures, quotas for specific measures, administration of the SO, and customer coverage.

3.1 Target

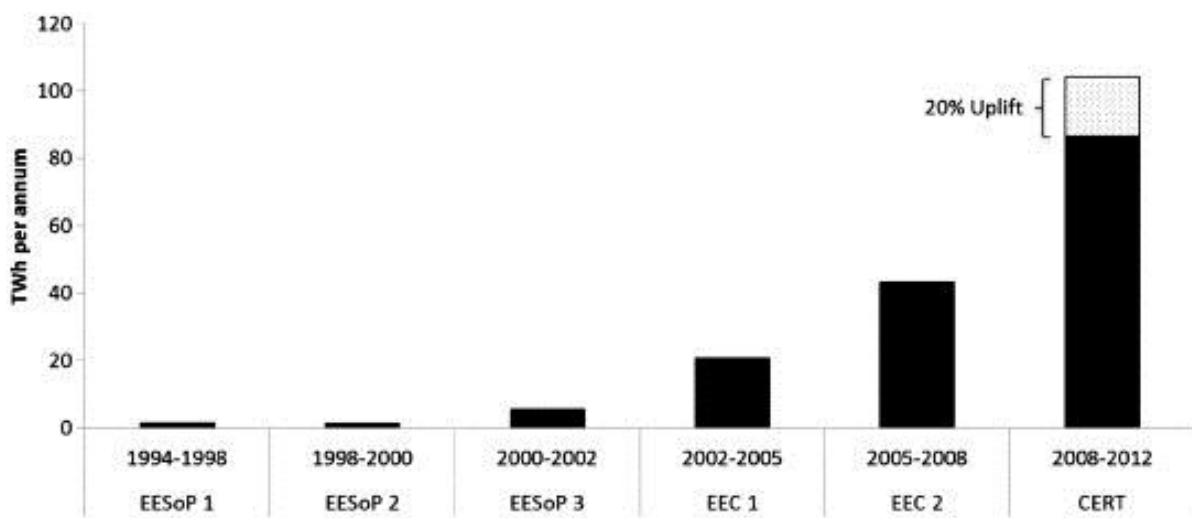
Regarding the energy savings target, there were two substantial changes: First, it was raised significantly since 1994, and second, its definition changed.

The total energy savings target of the SO in 1994-1998 and 2008-2012 cannot be directly compared, because the EESoP 1 target was defined in terms of energy to be saved over the lifetime of the measures, whereas CERT defines the target in Mt CO₂ (lifetime). According to OFGEM (2008c), the CERT target is equivalent to doubling the target under EEC 2, which was 130 TWh (lifetime). Taking into account the 20%

uplift in September 2008 (see section 4.3) and the extension of the scheme to December 2012, the total (implicit) energy savings target of CERT is almost 500 TWh (lifetime). This means that the original SO target of 6 TWh (lifetime) increased eightyfold from 1994-1998 to 2008-2012. Again, these figures are not comparable on a like-for-like basis because the length of the various SOs differs. Therefore, for the purpose of this paper an average (implicit) annual energy savings target is calculated that allows direct comparison of the schemes (see figure below).

changed the target from energy to carbon emissions and abolished the discounting procedure (OFGEM 2009a). All this makes it difficult to compare the targets on a like-for-like basis and further data correction is required for a more precise comparison. However, the overall magnitude of target change is still notable.

Figure 2: Changes to the policy target



Source: based on various reports (DEFRA 2008; OFFER 1998; OFGEM 2005, 2008b, 2009a, 2009b; OFGEM and Energy Saving Trust 2003)

The figure shows that the implicit annual energy savings target increased almost seventyfold from 1994-1998 to 2008-2012, which represents a considerable change. However, there are further caveats to comparing the targets on a like-for-like basis: The target definition changed over time. Under EESoP 1 and 2, the target only related to electricity, EESoP 3 set a target for both electricity and gas separately and the EEC 1 and 2 targets were fuel standardised, allowing suppliers to achieve savings in homes heated by gas, electricity, coal, oil or LPG. Energy savings were carbon weighted and discounted in line with the HM Treasury Green Book, although the rate changed over time (guidelines for carrying out cost-benefit analysis). Hence EEC 1 and 2 essentially already set carbon targets. CERT then

3.2 Cost of programme

As a result of increasing targets, the cost of the programme went up from just £101.7 million in EESoP 1 (£25 million per year) (OFGEM and Energy Saving Trust 2003) to £5.5 billion in CERT (£1.2 billion per year) (DEFRA 2008). While EESoP 1 and 2 obliged energy suppliers to spend a certain amount of money, later versions of the SO only provided indicative figures that were nonbinding. Suppliers passed on the costs of the SO to their customers via energy bills, and customers made contributions to some of the measures as well. Expenditures were subject to supply price control (and the 1998 supply price restraint) in earlier versions of the SO (EESoP 1 and 2), prescribing the maximum that could be charged. However, expenditure in later versions did not fall under such tight control and only indicative figures were provided. The average bill did increase by only £1 per household per year

during the EESoP 1 scheme (£1.5 in 2008 prices), but by more than £50 per household per year under CERT (in 2008 prices), leading to a more than thirtyfold increase over 18 years (corrected for inflation). The costs of saving one unit of electricity or gas during EEC 1 was 1.3p/kWh and 0.5p/kWh respectively (Lees 2006). Slightly higher costs were involved in the delivery of EEC 2 (electricity: 2.1p/kWh, gas: 0.6p/kWh) but still considerably below household energy prices (Lees 2008).

Note that these are average cost figures and some customers contributed more than others. Also, some customers did not benefit from the SO whereas others did. According to a national survey conducted in 2011, 39% of all households in the UK benefited from measures supported by CERT since 2008 (Ipsos MORI et al. 2011).

3.3 Other notable changes

While the overall ambition and cost of the SO is probably the most remarkable change, there were other modifications that are notable:

- *Social equity*: The first three SO schemes did not set a specific target for disadvantaged customers. However, EEC 1 was the first scheme that put in place a target for the so-called Priority Group, the defined group of disadvantaged customer. 50% of all savings had to be achieved within the Priority Group (OFGEM 2001). This target did not change in EEC 2 (OFGEM 2004), but with CERT the target was reduced to 40% (OFGEM 2009b) (see section 4.6).
- *Trading*: EESoP 1-3 did not allow trading of energy savings between suppliers and trading of energy saving obligations was only allowed with the start of EEC 1. Suppliers were allowed to buy certificates from or sell those to other suppliers. However, trading did not play a major role, and only very few suppliers traded parts of their individual targets (Powells 2009).
- *Banking*: Since EEC 1, suppliers are allowed to carry over energy savings from one SO period to another. In the beginning this was limited to 10% of the target, but this limit was abolished with the inception of EEC 2.
- *Eligible measures*: Later versions of the SO also allowed the energy suppliers to use non-energy efficiency measures such as micro-renewables, but so far this was, and still is, at a very low level. Also, both ground and air source heat pumps were used as part of the heating measures, but only contributed a small proportion to the total savings achieved.
- *Minimum quotas*: As part of the CERT extension and for the first time since the inception of the SO, DECC decided to set a minimum share for insulation measures. Subsequently, suppliers were required to achieve 68% of the target under CERT by investing in insulation measures (see section 4.8).
- *Administration*: The target for EESoP 1-3 was set by the regulator whereas after 2002 the government acquired the target setting powers (see detailed discussion below in section 4.4).
- *Coverage*: Early versions of the SO (EESoP 1-3) allowed energy suppliers to target both domestic customers as well as small businesses. This changed with EEC 1 and only domestic customers could be targeted.

The list above only highlights some of the notable modifications and is by no means comprehensive.

3.4 Summary of changes to the Supplier Obligation over time

Table 1 summarises how the scheme changed since its inception in 1994:

Table 1: History of the SO in the UK

Name of scheme	EESoP 1	EESoP 2	EESoP 3	EEC 1	EEC 2	CERT
Inception year	1994	1998	2000	2002	2005	2008
Period*	1994-1998	1998-2000	2000-2002	2002-2005	2005-2008	2008-2012
Target	6.1 TWh (lifetime)	2.7 TWh (lifetime)	4.9 TWh Electricity & 6.1 TWh Gas (lifetime)	62 TWh (lifetime)	130 TWh (lifetime)	293 million t CO ₂ (lifetime)
Implicit annual target	1.5 TWh (lifetime)	1.4 TWh (lifetime)	5.5 TWh (lifetime)	21 TWh (lifetime)	43 TWh (lifetime)	~104 TWh (lifetime)
Target group	Public Electricity Suppliers (PESs)	Public Electricity Suppliers (PESs)	all licensed gas and electricity suppliers with at least 50,000 domestic customers	all suppliers with over 15,000 gas and/or electricity domestic customers	all suppliers with over 50,000 gas and/or electricity domestic customers	all suppliers with over 250,000 gas and/or electricity domestic customers
Coverage	Domestic and small business electricity customers	Domestic and small business electricity customers	Domestic and small business electricity and gas customers	Domestic electricity and gas customers	Domestic electricity and gas customers	Domestic electricity and gas customers
Cost of the programme**	£101.7 million	£48.1 million	£110 million (indicative)	£500 million (indicative)	£1.2 billion (indicative)	£5.5 billion (indicative)
Annual expenditure	£25 million	£24 million	£55 million	£167 million	£400 million	£1,158 million
Expenditure allowance	£1 per franchise customer per year allowed through the supply price control	£1 per franchise customer per year allowed through the supply price restraint	£1.20 per customer per fuel per annum, indicative in target setting model	£3.60 per customer per fuel per annum, indicative in target setting model	£9 per customer per fuel per annum, indicative in target setting model	£51 per customer per annum, indicative in target setting model
Allowance for R&D and energy monitoring	3%	0.42%	0.5% for monitoring and 0.25% for R&D	not applicable	not applicable	not applicable
Percent of savings in priority group	30% (expected, not compulsory)	65% of expenditure (expected, not compulsory)	67% of expenditure (expected, not compulsory)	50%	50%	40% 15% in Super Priority Group
Carry over	none	none	none	10%	unlimited	unlimited
Trading	none	none	none	yes	yes	yes
Mix of measures	requirement to use variety of measures	requirement to use variety of measures	requirement to use variety of measures	not prescribed	not prescribed	minimum levels for some measures (68% from insulation)
Administering body	OFFER	OFFER	OFGEM	OFGEM	OFGEM	OFGEM
Target setting body	OFFER	OFFER	OFGEM	DEFRA	DEFRA	DEFRA and then DECC (since October 2008)

* period of schemes from 01 April in start year to 31 March in end year; different for CERT where period from 01 April in start year to 31 December in end year

** until EESoP 3 costs were regulated and capped, for later schemes associated costs were only modelled but not regulated ('indicative' refers to modelled but unregulated costs)

Source: based on various sources (DECC 2010a, 2010b; DEFRA 2008; OFFER 1994, 1998; OFGEM 2005, 2008b, 2009a, 2009b; OFGEM and Energy Saving Trust 2003)

The paper will now proceed with analysing the identified policy drivers that led to the changes summarised above.

4 Key drivers of change

This section sets out in more detail six of the key pressures that contributed to the remarkable change of the SO, namely market liberalisation and ideas around Least Cost Planning, climate change, rising energy prices, change of key personnel, institutional change, and fuel poverty.

4.1 Market liberalisation and Least Cost Planning

The beginnings of the SO can be found in the late 1980s and early 1990s. In the early 1980s, the new ‘neoliberal energy paradigm’ (Fudge et al. 2011) or the ‘new utility regulatory regime’ (Helm 2002) began to take shape and the newly elected Conservative government saw its task ‘to set a framework which will ensure that the market operates in the energy sector with a minimum of distortion and energy is produced and consumed efficiently’ (Lawson 1982). So energy efficiency was not debated in the context of reducing carbon emissions as it is today, but it was very much perceived as a means to achieve economic efficiency and maximise economic productivity of the economy at the time. The arrival of the new government was followed by initiatives to liberalise the markets for energy and open them up for competition, as this was seen as the most suitable way of achieving efficient supply and consumption of energy (Helm 2003).

The energy market liberalisation in the 1980s resulted in the creation of two independent regulators: the Office of Electricity Regulation (OFFER) and the Office of Gas Supply (OFGAS). Their primary duty consisted of having to develop competitive markets and regulate prices in those areas where competition was not feasible (e.g. natural monopolies) (Owen 2006). The 1986 Gas Act also put a ‘duty to promote the efficient use of gas’ on OFGAS. The 1989 Electricity Act made provisions for OFFER to ‘determine ... standards of performance in connection with the promotion of the efficient use of electricity by consumers as ... ought to be achieved by ... suppliers’. Hence, the promotion of energy efficiency was part of the primary legislation and regulators had the task to ensure energy was supplied and consumed efficiently. It was assumed that once energy markets were fully liberalised, energy efficiency services would be offered by the energy companies as part of their portfolio to compete against each other. However, until full competition was actually reached, policy makers accepted that some sort of intervention by the regulator to encourage greater efficiency on the demand side would be necessary (see for example OFGAS 1994). Therefore, most of the discussions at the time were dominated by the discourse of competition and economic efficiency.

As a result of those debates in the 1980s, there was considerable interest in instruments to incentivise energy efficiency and in particular in the so called Least-Cost-Planning approach

(LCP), which was used in the US for encouraging utilities to take into account the demand side and potential energy savings option at the customer end. LCP is based on the assumption that people do not want to buy energy, but energy services, and those should be provided at lowest cost. Where it is cheaper to save a unit of energy rather than supplying it, utilities should opt for the demand reduction option and vice versa (Sant 1979). It is easy to see why this particular policy instrument generated a lot of interest in the UK as it fitted very well with the dominant way of thinking at the time.

This idea of using utilities as the agents to roll out energy efficiency programmes was discussed in the UK context. For example, in the mid-1980s, in a series of reports called ‘Lessons from America’, the Association for the Conservation of Energy (ACE) presented the US way of approaching energy efficiency in utility regulation. The idea of using a LCP-type instrument in the UK was investigated further, for example in a report by ACE commissioned by OFGAS, that generally deemed such an approach suitable and beneficial (Brown 1990). It also featured in an OFFER consultation on energy efficiency (OFFER 1991), although it was argued in the document that LCP might not fit with the UK context that well, mainly because there was competition in supply.

However, the LCP approach using utilities was endorsed by the House of Commons Environment Committee in a report on energy efficiency which viewed ‘energy utilities and their regulators as key players in funding and implementing energy efficiency programmes’ and called for ‘a fundamental shift in attitudes and approach on the part of the utilities and other power generators’ (House of Commons Environment Committee 1993a, para 5). The Committee also travelled to the US to study LCP policies in various US states. NGOs such as Friends of the Earth and Greenpeace supported the LCP approach and the idea of using utilities as vehicles for the delivery of energy efficiency programmes. While British Gas clearly resisted any move into the direction of LCP, the electricity utilities reacted more measured. Some utilities such as East Midland Electricity and Manweb even supported LCP and carried out pilot projects in that area. Other electricity utilities, such as South Western Electricity and Eastern Electricity, were more concerned and reluctant to embrace the concept of LCP (House of Commons Environment Committee 1993a).

The discussions bore fruit and according to the

second year report on the Environment White Paper the government saw utilities in a good position to carry out energy efficiency measures at the customer end (HM Government 1992).

4.2 Climate change

In the last two decades climate change policy became much more high profile in the UK and emerged as a distinct policy area after Margaret Thatcher had mentioned climate change as a substantial challenge to mankind in her 1988 landmark speech to the Royal Society (Pearce 2006). Her speech manifested a sharp turning point in her government's approach towards environmental policy and drew the public's attention to the issue of climate change (Anderson 1991). However, while climate change policy started to emerge as a new policy area in the 1990s, it was not a major driver of the SO in the early 1990s, although the first British SO, EESoP1, was partly introduced as a result of national climate policy: together with the E-factor (an energy efficiency price premium for gas), EESoP 1 was supposed to raise money for the Energy Saving Trust (EST) that was established by the government, British Gas, and public electricity supply companies in 1992 to reduce home energy use and the associated carbon emissions. The EST played a key role in the government's climate policy strategy for the domestic sector as outlined in the 1994 UK Climate Change Program (HM Government 1994).

The importance of climate change as a policy driver began to increase at the end of the late 1990s: Following the 1997 election, the 2000 Climate Change Programme committed the UK to a 20% reduction of carbon emissions by 2010 based on 1990 levels. The Programme explicitly mentions the SO as one of the six key UK policy measures to save carbon (DETR 2000). However, at the time the targets were comparably humble and nothing of the scale seen later in the 2000s. The concept of having more long term targets did not exist at that time and it took some time until climate change targets became more ambitious.

A report published by the Royal Commission on Environmental Pollution in 2000 on energy and climate change initiated a discussion about long-term targets by recommending for the first time a 60% reduction in carbon emissions by 2050 based on 1990 levels. The same figure also featured as an indicative target in the 2003 Energy White Paper that stressed that in order to

achieve that sort of scale of reduction, the SO 'will have a major role to play in homes' (DTI, 2003, p. 34).

The growing importance of climate change policy as a driver for the SO was also reflected in a modification of the metric: Under EESoP 1-3 the target was simply defined in kWh savings to be achieved (although it was an indicative target, the actual target was set in £ per customer per year). EEC 1 introduced a target with fuel weighted kWh, i.e. it depended on the carbon intensity of the fuel saved how much it would count towards the target. So effectively, EEC 1 introduced a carbon target. From EEC 1 onwards, climate change policy appears to be the strongest driver and the UK carbon targets put pressure on the government departments to deliver a substantial contribution to the targets via the SO.

Going forward, the SO remained a key element in the government's climate change strategy. The SO featured among the top three additional measures to save carbon across all sectors in the 2006 Climate Change Programme (HM Government 2006). This was also confirmed in the 2007 Energy White Paper: The government expected that in 2020 the SO would deliver up to 17% of all carbon reduction measures planned at the time, making it the second most significant measure after the EU emissions trading scheme. The White Paper highlights the government's commitment to continue delivering carbon savings in the household sector via the SO until at least 2020 (DTI 2007).

Finally, in order to align the SO with the wider climate policy landscape, the metric of the SO changed from TWh to carbon emissions when CERT commenced in 2008. The Climate Change and Sustainable Energy Act 2006 gave powers to the government to set the obligations in the form of a carbon emissions reduction target.

4.3 Rising energy prices

In the 1980s and 1990s, energy prices were low compared to the 2000s with the general trend of falling prices since the early 1980s. However, from 2002/2003 onwards energy prices of all fuels grew dramatically - gas prices in real terms almost doubled in just a decade, prices for coal and smokeless fuels increased by 65%, and electricity prices by 45% (DECC 2011d).

The rising energy prices particularly affected the

SO in 2008, when prices increased more rapidly than any price rise since the 1973 oil crisis: Residential gas prices in 2008 mounted by almost 50% in real terms in just four quarters, resulting from rising wholesale gas prices in continental Europe, where gas prices are contractually linked to oil prices. Similarly, electricity prices went up by almost 30%, also mainly due to rising wholesale gas prices. In the context of increasing energy bills, there were calls in early 2008 for a windfall tax on energy suppliers. A heated discussion had started after OFGEM reported to the Treasury and the Committee on Business and Enterprise that energy companies made £9 billion profit from EU ETS permits which were issued for free. In January 2008, OFGEM proposed a windfall tax on the major energy suppliers to help the fuel poor (OFGEM 2008a). Just a few weeks after the OFGEM proposal, ministers of the Treasury and the Department for Business, Enterprise and Regulatory Reform held a meeting with the heads of major energy suppliers and told them that they might face a levy on their profits to help the poor. As expected, the proposals were not met with great enthusiasm by the energy suppliers.

The government, however, did not agree on the matter - Chancellor Alistair Darling and John Hutton, the Business Secretary, opposed a windfall tax on the basis that energy companies needed extra funds to expand low carbon energy sources. More than 70 Labour MPs signed a petition that called for a windfall tax and hoped to make the issue one of the dominating themes of the party's annual conference in September. In early August 2008, ministers of various government departments examined different alternatives to a windfall tax. One of them was to oblige energy companies to spend the bulk of the money under CERT in the first two years, and also to increase the share spent on helping the fuel poor. Raising the proportion of auctioned EU ETS permits and a carbon levy was also considered. On 11 September 2008, Number 10 finally revealed the package they negotiated with the energy companies – the Home Energy Saving Programme. The package included an increase in the existing CERT target by 20% with a new target of 185 million lifetime tonnes of CO₂ for the period April 2008 - March 2011. This implied additional expenditure by the energy suppliers of an estimated £560 million (HM Government 2008). Number 10 argued that the programme had advantages over a windfall tax and that 'by choosing this route the Government can more swiftly help families cut fuel bills now and in the medium term; help secure the long-term investment in new low-carbon energy infrastructure this country requires; and help keep

prices down' (HM Government 2008, p. 2).

Interestingly, raising the SO target by 20% initially led to an *increase* of energy prices as suppliers are allowed to simply pass through the costs of the SO to the energy customers. Therefore, the move had no significant financial impact (if at all) on energy suppliers' profits (which was the focal point of the debate). Number 10 presented the decision as if energy suppliers had to spend an additional £1 billion on energy efficiency without mentioning that consumers were to pay for this in the end. It seems that energy companies' pleas for not putting a windfall tax on them because they desperately needed to invest in new infrastructure had found an open ear.

4.4 Institutional changes

An important institutional change which affected the SO substantially in its further development happened in 2002 and will be described in the following.

In 1994, the electricity regulator, OFFER, put energy efficiency standards of performance (EESoP) on the Public Electricity Suppliers (PESs), the fourteen companies created when the electricity market in the United Kingdom was privatised in 1990. Over a 4-year period EESoP 1 raised about £100 million for energy efficiency projects, equivalent to £1 per customer per year (Owen 1997). However, OFFER did not raise the amount of money expected by ministers, and OFFER's Director General was concerned that higher obligations 'would raise issues more appropriately dealt with through general fiscal policy' (ENDS 1994). Also the second EESoP scheme, which operated from 1998-2000, did not raise significantly more funds than EESoP 1. Using similar arguments, OFGAS rejected such a scheme for the gas sector entirely (see more details in section on change of key personnel). Without changes in primary legislation it looked like further measures would be extremely difficult to implement. The new Labour Government that came into power in 1997 announced a review of utility regulations. In 2000, the proposals took shape and were passed through parliament as part of the Utility Bill. The Bill gave the Secretary of State powers, by order, to impose energy savings targets on gas and electricity utilities. This resolved some of the conflicts over the first SO schemes, which struggled to get regulators' support due to conflicting duties and unclear responsibilities.

The Utilities Bill directed the responsibility for target setting to central government (DETR, then DEFRA and DECC) and obliged the regulator to implement the schemes that would be needed to reach the targets. This enabled the government to significantly extend EESoP, imposing much more ambitious targets on energy companies. DETR set the first target in the Electricity and Gas (Energy Efficiency Obligations) Order 2001. The target of the old EESoP 3 scheme was only 11 TWh (4.9 TWh Electricity & 6.1 TWh Gas), whereas its successor, EEC 1, put a much higher target of 62 TWh on energy suppliers (OFGEM 2005).

The institutional change that occurred in Britain resulted from a lengthy political debate about the role of the energy regulators and their unwillingness to increase expenditure for energy efficiency measures. In order to realise substantial carbon emission reductions in the domestic sector, modifying the institutional framework appeared to be the only option. Hence the institutional change constituted a deliberate means to achieve carbon reduction goals in the housing sector rather than an unrelated coincidence.

4.5 Change of key personnel

Change of key personnel can trigger policy change in some instances and is a recognised mechanism in the literature on policy change (e.g. Sabatier 1988). A good example of the impact of changing key personnel affecting the dynamics of policy change can be found in the UK during EESoP 1 and 2: In the 1990s, when the SO was still run entirely by the regulator (including the target setting procedure), change of personnel at the top of the regulator OFGAS had a significant effect on the development of the SO. The following part shows how a single person, Claire Spottiswoode, who became director of OFGAS in 1993, successfully blocked any attempts of implementing a SO in the gas sector and downgraded the E factor significantly. In contrast, OFFER's director was much more sympathetic to running energy efficiency programmes and put in place the first SO in electricity in 1994. Only when a new OFGAS director was appointed, the way was finally cleared for having a SO in gas as well.

In 1991, Sir James McKinnon, the Director General of OFGAS, announced a new gas price control formula to operate from 1992. This formula would include an 'E-factor' allowing gas

suppliers to pass 100% of the costs of energy efficiency projects approved by the Director General through to gas customers. McKinnon expected that around £50 million a year might be spent on energy efficiency measures (Owen 2006). Money raised via the E factor was supposed to help fund the Energy Saving Trust (EST) that was established by the government, British Gas and public electricity supply companies in 1992 to reduce home energy use and the associated carbon emissions (Owen 1997). Although OFGAS established the E factor, the regulator made it pretty clear from the beginning that it did not see wider environmental goals within its remit and this ought to be dealt with by central government (House of Commons Environment Committee 1993b). This would become an issue of great controversy later on.

The story took a very different turn when McKinnon left office in 1993 and Claire Spottiswoode took over. As a result of her appointment, in November 1993, there were serious concerns that not enough money could be raised for EST making it impossible for the Agency to deliver the CO₂ savings promised in the Climate Change Programme. Claire Spottiswoode rejected raising money via the E factor for energy efficiency measures administered by EST. While the 1986 Gas Act did provide some leverage for OFGAS to support energy efficiency measures, Spottiswoode did not feel comfortable raising prices (OFGAS, 1994). Spottiswoode took the view that one should not interfere with the purity of the market with cross-subsidies of this kind. Once the market was fully liberalised, she argued, energy efficiency measures would just be offered by the energy companies as part of a competitive market offering and consumers were best placed to decide whether they wanted energy efficiency measures or not. Spottiswoode expected that to happen in 1998, when the whole of the gas market had been opened to competition. Only in the mean time, she argued, there would be some, but a very limited, role for energy efficiency measures as encouraged by the E factor (OFGAS, 1994). As a result, British Gas submitted a greatly scaled down package of EST projects to OFGAS, but most of their proposals were subsequently rejected by the regulator. In the end less than £2 million compared to the £50 million announced by McKinnon was spent by the time the E factor had ended in March 1997 (Owen, 2006). Following the same logic of argument, Spottiswoode also declined to put an obligation similar to EESoP on gas suppliers. There was the feeling that without reforming the primary legislation, i.e. the 1986 Gas Act, further energy efficiency programmes that involved gas

suppliers would be very unlikely.

The appointment of a new OFGAS director would eventually break the deadlock. Finally, in September 1998, Claire Spottiswoode's term as Director General of OFGAS came to an end and Callum McCarthy was appointed to be her successor. From the beginning on, McCarthy was much more sympathetic to having schemes such as the SO in gas and subsequently extended the SO to the gas sector.

4.6 Fuel poverty

In Britain fuel poverty is an important driver of energy policy and became a distinct issue of public concern following the oil crisis in 1973–1974. The recognition of regressive impacts of rising energy prices led to a distinction of fuel poverty from general poverty (Bradshaw 1983). Boardman argued that fuel poverty is different from income poverty because of 'the crucial role of housing stocks - the house, heating system and other energy using equipment' (Boardman 1991, p. 221).

Fuel poverty in the UK is defined as the need to spend more than 10% of household income on all energy use in order to maintain a satisfactory heating regime and other energy services (DECC 2011a). The original definition of fuel poverty goes back to Boardman (1991). Note that the official definition of fuel poverty used is currently under review by John Hills (2011) and it may change in the future.

However, the Conservative government did not recognise fuel poverty as a problem and avoided using the phrase in official documents (Boardman 2010). Its focus was very much on privatisation of the energy industry assuming that the benefits of this process would eventually reach all customers in form of cheaper energy prices (Sharratt et al. 2007).

While the Conservative government more or less ignored fuel poverty, it became an issue of high political significance immediately after Labour Party won the 1997 election (Boardman 2010). In the 1999 consultation paper on energy efficiency OFGEM explicitly mentions fuel poverty as one of the key objectives of energy efficiency schemes (OFGEM 1999). This was also reflected in OFGEM's Social Action Plan (OFGEM 2000), a document that the new Labour Central government asked the regulators to prepare as a

result of a fundamental review of utility regulation (DTI 1998). The objective of reducing fuel poverty was incorporated legally in the 2000 Utilities Act which states that the regulator and the Secretary of State must have regard to the interests of individuals regarded as fuel poor.

In addition to the Utilities Act, tackling fuel poverty became enshrined in legislation in 2000 when the Warm Homes and Energy Conservation Act passed through parliament. The Act resulted in the UK Fuel Poverty Strategy and committed the UK to eradicate fuel poverty in vulnerable households in England by 2010 (DTI 2001) and eradicate fuel poverty in all households as far as is reasonably practicable by 2016. The SO is mentioned several times in the document as one of the measures that would help to bring down fuel poverty.

Ironically, shortly after the adoption of the UK Fuel Poverty Strategy fuel poverty increased rapidly. The problem with the UK Fuel Poverty Strategy was that it relied on falling or at least not rising fuel prices (Boardman 2010). However, energy prices increased significantly over the last decade as pointed out in an earlier section. As a result, the number of households living in fuel poverty actually went up, not down following the adoption of the UK Fuel Poverty Strategy (DECC 2011a). Due to the rising number of households in fuel poverty there was constant pressure on the SO to address fuel poverty at least to some extent. This is also mirrored in the introduction of the obligatory Priority Group target of 50%, previously there was only an indicative target (DEFRA 2001).

The process caused a lot of tension due to the different objectives of the SO (reducing carbon emissions on the one hand and fuel poverty on the other), a process that is not unusual when putting social and environmental obligations on private utilities in a liberalised market (Jones 2001).

Subsequently, the SO was seen as a programme that could do both, reducing carbon emissions and contributing to the eradication of fuel poverty. However, at the latest from EEC 2 onwards it became clear that there was some confusion over the goals of the SO and also some evolving conflicts around those. While eradicating fuel poverty is mentioned in all the consultation documents following EESoP 3 as one of the objectives of the SO, the primary aim of the SO remained the reduction of carbon emissions.

This becomes very clear in the EEC 2 consultation document: The document stresses that EEC 1 ‘was not intended to specifically target the fuel poor’ (DEFRA 2004a, p. 7) and that the ‘primary aim is to make a significant contribution to the UK’s legally binding target under the Kyoto protocol’ (ibid., p. 5). This is restated more strongly in the CERT consultation where it is stressed that the SO ‘does not have a specific fuel poverty objective’, that the PG target was put in place ‘for reasons of equity’ (DEFRA 2006a, p. 7) and that the SO will ‘only ever be able to make a limited contribution to meeting our fuel poverty targets’ (ibid., p. 29). The change in focus has been described as ‘a discursive shift away from fuel poverty, toward a more ‘pure’ carbon reduction market’ (Powells 2009, p. 2352).

With energy prices unlikely to fall significantly over the next years and fuel poverty still being at very high levels with about 4 million households classified as fuel poor in England in 2009 (DECC 2011a), the conflicts sketched above will probably not go away.

4.7 Energy efficiency industry

Another driving force that has been identified is the uptake of the energy efficiency industry as a result of the SO. While the cost of the scheme is born by energy suppliers and their customers in the first place, the beneficiaries of the policy instrument clearly are the companies providing the energy efficiency measures incentives by the SO. With expenditures of currently more than £1 billion per year the SO creates a significant market for the energy efficiency industry.

A good example is insulation measures, which are the most important measures in terms of their contribution to the overall targets. Obviously there had been some activity in the insulation market already prior to the SO, but installation rates were much lower compared to what was undertaken during the last SO schemes. Before EESoP 1 started in 1994, only around 100,000 cavity wall insulation installations were carried out per year (Lees 2006). During EEC 2 and the first three years of CERT more than 550,000 cavity wall insulation installations were carried out on average every year. Even if one assumes that the activity that had been there prior to the SO already is included to 100% in that figure, it still means that the market for cavity wall insulation effectively grew by a factor of more than five within just ten years as a result of the

SO. Figures on the business as usual installation rates are also provided by the Impact Assessment of the Green Deal and the Energy Company Obligation which indicate that less than 50,000 cavity walls would be insulated without policy support (DECC 2011c). Those figures imply that EEC 2 and CERT increased the installation rate by a factor of eleven.

According to Toke (2000), the interest groups around energy efficiency did not have much influence in the 1980s and early 1990s, but at the end of the 1990s they were in a powerful position in the decision making process. Particularly over the last 10 years the energy efficiency industry has been getting stronger and continuously put pressure on government to increase the savings targets.

The two main associations representing the interests of the energy efficiency industry benefiting from the SO are the Association for the Conservation of Energy (ACE) and the National Insulation Association (NIA). In the early days of its existence ACE had limited impact on government policy, although it quickly developed a visible public and press profile (Owen 1995). While not as visible as ACE, NIA is another important energy efficiency industry lobby organisation. ACE and NIA frequently provide evidence to policy makers and respond to relevant consultations expressing its support of the SO, asking for higher targets and highlighting the capability of the insulation industry to deliver more. Also, an umbrella body, the British Energy Efficiency Federation (BEEF), acts on behalf of 19 trade associations involved with the energy efficiency market. The Federation meets quarterly with government officials to discuss relevant matters. According to Toke (2000), BEEF helped the energy efficiency industry to gain increased access to civil servants and ministers by, for example, being involved already at the pre-consultation stage rather than after proposals are finalised.

While it is not possible to identify the particular features that were modified in the SO as a result of pressure by organisations such as ACE, NIA, and BEEF, there is evidence that those groups managed to get involved more directly in the decision making processes, for example by being consulted prior to the official consultation stage and being part of important stakeholder forums.

4.8 Perceived successfulness of policy instrument

Another driving factor of the SO is the perceived successfulness of the SO. While initially there were concerns about how such a policy instrument might work and what the costs and benefits would be, government became much more confident in the SO and considered it as very successful. This also comes out of the government reports in which the SO was labelled for example as ‘highly successful’ (DEFRA 2007b, p. 28), the ‘flagship energy efficiency scheme’ (DECC 2009, p. 5), and ‘one of the most cost-effective policies to reduce carbon emissions’ (DEFRA 2007a, p. 4). Those claims were based on various evaluations of the SO which all attributed substantial savings to the policy (2006, 2008; OFGEM and Energy Saving Trust 2003).

However, it took a while until the SO was so highly regarded. At first, people did not want to over-commit to something they were not familiar with and there were concerns about the costs and the benefits and whether it would work. However, those concerns diminished after a while. Part of addressing those concerns was the publication of an assessment by the National Audit Office in 1998 which concluded that EESoP 1 was a successful and cost-effective scheme that should be extended and widened in the future (National Audit Office 1998). Also according to the results of the Climate Change Programme Review, the Energy Efficiency Commitment was one of the most cost-effective policies to reduce carbon emissions (DEFRA 2006b). In its CERT consultation DEFRA announced that it had therefore be ‘decided to maximise carbon emission reductions via this policy mechanism’ (DEFRA 2007a, p. 4).

The energy suppliers played an important role in the process of growing confidence in the effectiveness of the SO. Throughout the various schemes suppliers frequently raised concerns about the targets being too ambitious and at some stages even, for example prior to EEC 1, that those could never be met.

However, in the end suppliers delivered and discharged their obligations long before the end of all schemes. Because suppliers met their targets so comfortably, government became more confident that the targets could be increased.

This is also highlighted in the CERT consultation document (DEFRA 2006a). While energy suppliers kept raising concerns about the size of

the targets they seemed to have lost credibility given that in spite of pointing out how difficult those targets were they always delivered what was expected. Therefore the government felt confident to enlarge the targets every time a new SO scheme was designed.

However, in the beginning suppliers had much more flexibility with regard to the types of measures they could promote through the SO. Suppliers chose to deliver their obligations mainly via low cost insulation measures such as cavity wall and loft insulation and energy efficient light bulbs. When CERT was revised in 2010 a quota was implemented requiring suppliers to deliver at least 68% of the savings via insulation measures. Also, energy efficient

light bulbs were banned from the scheme in light of the EU wide policy to phase out incandescent light bulbs. These developments are likely to make it much more difficult for energy suppliers to achieve their targets and there are first signs that suppliers may not deliver their obligation as comfortably as happened in the past. The UK government warned suppliers in September 2011 that they need to increase their activity in order not to miss the 68% insulation target (DECC 2011b).

4.9 Drivers found not relevant

Surprisingly, EU policy did not appear to have a significant if any impact on the SO, although there were considerations around linking the EU Emissions Trading Scheme with White Certificate Schemes similar to the SO. However, the additional benefits from such a linkage appeared to be limited (NERA 2006; Sorrell et al. 2009) which is why the DEFRA decided against pursuing such ideas.

5 Conclusion

This paper sketched the development of the principal home energy efficiency policy instruments in the UK from its inception identifying some, but not all, driving forces that impacted on policy change. The SO shows remarkable and frequent changes in its development, and arguably few people would have expected the scheme ever reaching the scale it reached in recent years. The analysis of the drivers shows that it was mainly gradual

processes that caused the changes which happened over time. This is contrary to the perception that significant policy change can only be triggered by crisis events.

While the SO was initially driven by attempts to incentivise the efficient consumption of energy at a time of market liberalisation, other issues such as climate change, rising energy prices, and fuel poverty became more and more important over time. In addition, changes in institutional structures and key personnel had a significant impact on the SO. The growth of the energy efficiency industry and the perceived successfulness of the SO put further pressure on the government to stick with the instrument and increase the targets.

The question remains whether the trend of ever increasing targets will continue in the future given that rising targets also mean a higher contribution by households on their bills particularly because the potential for low cost measures will at some point be depleted.

According to a recent government consultation, the successor of the current SO will set a target equivalent to expenditure levels slightly higher than those generated at the moment. However, the carbon target is supposed to be much lower due to a redirection of the SO from low cost measures to more high cost measures and the introduction of new policy instruments to incentive the low cost measures. Whether this will happen is still out in the open, but it could have a significant effect on the SO once again. Therefore, future developments promise to be an interesting area for more research.

Additionally, an analysis based firmly in theories of the policy process and policy change could further advance our understanding of the underlying processes. A good starting point for such an analysis would be theories looking at change processes taking into account cumulative pressures.

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